

Amendments to the Specification:

Pursuant to 37 C.F.R. § 1.121(b) kindly amend the specification as follows. Amendments to the specification are made by presenting replacement paragraphs or sections marked up to show changes made relative to the immediate prior version. The changes in any amended paragraph or section are being shown by strikethrough (for deleted matter) or underlined (for added matter).

Page 5, lines

Since the phaser is cam torque actuated (CTA) there is always going to be leakage present. Make up hydraulic fluid or oil is supplied to the common inlet line (110). The common inlet line (110) contains an inlet check valve (300). The inlet check valve is only open when there is neither resistive nor driving torque, namely during null position. With the placement of the check valve in the common inlet line, as shown in figures 3 through & 9, it eliminates the problem with the oil in the chambers leaking out when the engine is shut off.

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Figure 4a shows a schematic of the cam torque actuated phaser in the retard position, specifically when the phase shift allows the valve to open. The spool (104) is moved inward (to the right in the figures) to shift the phaser to the retard position by the force actuator (103) which is controlled by an electronic control unit (ECU) (102). The shift of the spool (104) compresses spring (116). As the spool is shifted to the right, the camshaft lobe (222) compresses the valve spring (224), see Figures 4b and 4c, and resistive torque, ~~torque~~ having a positive value is created. The resistive torque causes the rotor (1) attached to the camshaft (9) to lag behind the chain-driven sprocket housing (not shown). When the cam lobe (222) is compressing the valve spring (224), the advance chamber (17a) contains high pressure, forcing the hydraulic fluid (122) out of the advance chamber (17a) and into inlet line (111). From inlet line (111) the hydraulic fluid (122) exhausts out the advance exhaust port (106) and into return line (304) containing recirculation check valve (302). From here the hydraulic fluid enters the inlet line (113) leading to the retard chamber (17b), moving the vane (16) in the direction indicated in the figure.

Figure 7a shows a schematic of the cam torque actuated phaser in the advance position, specifically when the cam begins a new rotation to open the valve as shown in Figure 7c. When the cam lobe begins the new rotation, the cam lobe wants to lag or slow down. This resistive force having a positive value, as seen in Figure 7b, tries to push the hydraulic fluid (122) out of the advance chamber (17a) and into the retard chamber (17b). However, recirculation check valve (302) is closed and the hydraulic fluid has to recirculate back to the advance chamber (17a). The recirculation of the hydraulic fluid prevents the rotor ~~from~~ from losing the movement that was gained when a driving torque was present. Therefore, when the spool (104) is moved outward the hydraulic fluid may only flow from the retard chamber (17b) to the advance chamber (17a) and not reverse. The flow from the advance chamber (17a) to the retard chamber (17b) is prevented by the recirculation check valve (302).

Figure 9 shows another alternative embodiment in which two inlet check valves (502) and (504) are connected to each other via line (508) and are located between the advance chamber (17a) and the retard chamber (17b) and the spool (104). By placing additional ~~the~~ inlet check valves (502), (504) as indicated by the figure, the advance chamber (17a) and retard chamber (17b) are always full when the spool valve is at the null position. This is especially important when there is a large overlap and a close clearance spool valve. If the two inlet check valves were not present, an additional movement or dither would be necessary to open the inlet lines (111), (113) to the advance (17a) and retard chambers (17b).